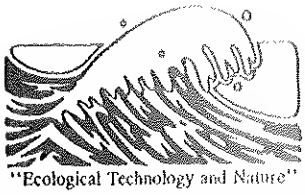


Holmberg Technologies Inc.

7161 Brookhaven Terrace
Englewood, Florida 34224

Phone 941-475-2666 Fax 941-473-2337

Holmberg Technology Inc. (HTI) Invoice # 3015 Date Feb.04, 2013

To Mr. Bruce C. Campbell , City Manager
City of Flagler Beach
PO Box 70, 105 South 2nd Street
Flagler Beach, Florida 32136

Dear Mr. Campbell:

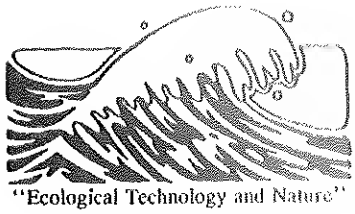
Subject; Contract payment due for natural shoreline analysis or consultant services of Dick Holmberg, President of HTI .

Purpose; 2nd phase is delivery of comprehensive plan to the City of Flagler Beach.

Payment Schedule; City of Flagler Beach is to reimburse HTI $25,000.00 US on delivery of comprehensive plan Please remit by wire transfer. Payable to Holmberg Technology Inc. at Bank Of America,USA, routing number 063100277. Account number 00162223 4964. Other info, Bank of America, Betty Tullis CSR "Swift Code" BOFAUS3N Address: Bank of America, 1785 McCall Road, Englewood, Florida 34223 USA

Dick Holmberg

Dick Holmberg President HTI



HOLMBERG TECHNOLOGIES, INC.

7161 Brookhaven Terrace
Englewood, Florida 34224
Phone: 941-475-2666 Fax: 941-473-2337
Web Sites; Erosion.com & Blufferosion.com

January 31, 2013

Mr. Bruce Campbell
City of Flagler Beach
P.O. Box 70, 105 South 2nd Street
Flagler Beach, Florida 32136

Re: Analysis

Dear Mr. Campbell

Enclosing Comprehensive Shoreline Analysis for the city of Flagler Beach. Please review prior to the February 14, 2013 Commission meeting, so I can address any questions you, the mayor or any commission member may have. Please send in writing to my attention so I can respond before the meeting date.

Hopefully this will ensure our thorough and comprehensive presentation at the commission meeting.

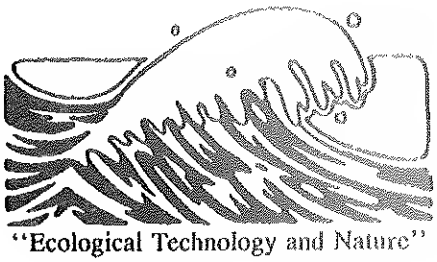
Look forward to seeing you on the 14th so we can proceed on this important and timely matter

Sincerely

Dick Holmberg
President HTI

CITY OF FLAGLER BEACH

COASTAL AVULSION MITIGATION AND RESURECTION ANALYSIS



PREPARED BY DICK HOLMBERG

President, Holmberg Technologies, Inc.

January 2013

Introduction

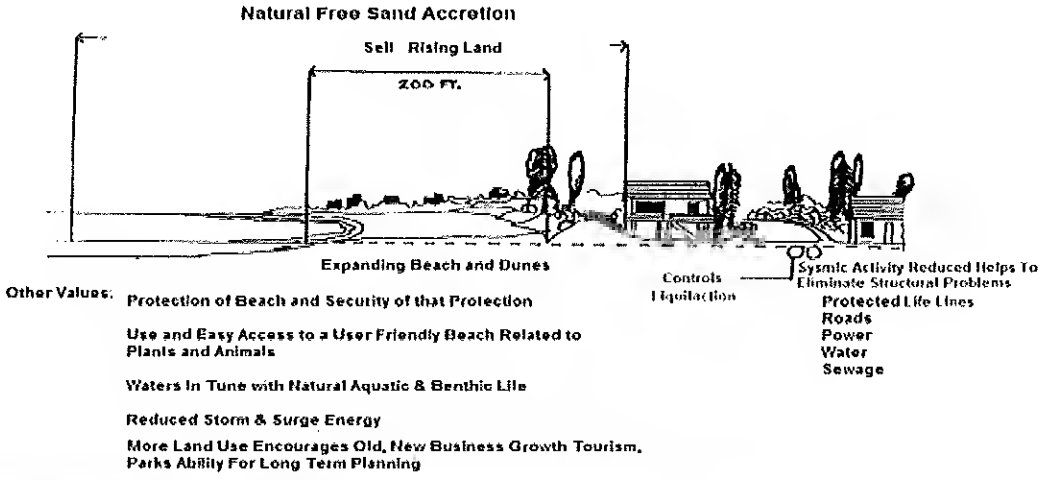
As a tourist community with six miles of shoreline Flagler Beach's future depends on the health of its beaches. Currently much of the City's shoreline is in a state of distress due to widespread and worsening erosion. The situation is not only a threat to Flagler's tourist based economy; it is also undermining A1A, a main highway and evacuation route. When implemented, Holmberg Technologies Inc.'s (HTI) proven restoration and resurrection technology will result in a dramatically improved Flagler Beach shoreline. Results will be immediate and long lasting including an expansive, sand covered beach and the protection of the area's natural habitats for generation to come.

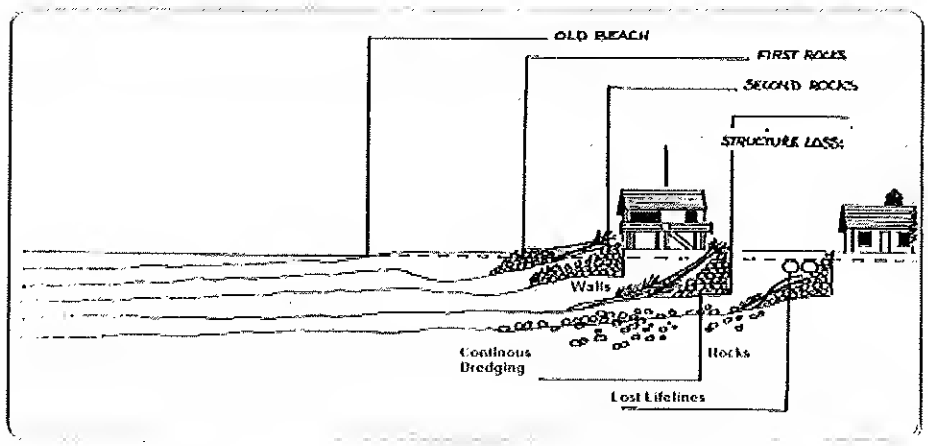
The photo on the left is looking south along Flagler Beach. Unnatural erosion is clearly evident; notice the people walking on the beach are approximately 25 feet below Highway A1A. When HTI Technology is implemented the beach and dunes will become level with the roadway.

The photo above is a view looking north along Flagler Beach. Large rocks and repeated dredging have not solved the erosion problem along the shoreline. Approximately 50 years ago the sand at this location was even with A1A and extended to the end of the pier. If not addressed, the problem will continue to worsen, undermining Highway AIA, an important evacuation route.

Accretion vs. Avulsion

Over time HTI technology increases the land along shorelines. This natural process is known as accretion. The illustration below, titled "Natural Free Sand Accretion" demonstrates this naturally occurring process and its benefits. Once installed maintenance costs are eliminated; in fact over time the project will pay for itself many times over by dramatically increasing sand accretion and the size of the beach.





The above illustration shows what has happened to Flagler Beach's shoreline as dredging has occurred. Continued dredging has resulted in unnatural erosion known as avulsion. Over time the shore line has washed away despite sand replenishing and rock placement. Unlike HTI technology, dredging encourages avulsion, the loss of land by the action of water. Dredging increases the slope of the shoreline; thereby increasing the velocity or speed of the water flow. Dredging and avulsion become a vicious cycle that requires constant maintenance and financial investment.

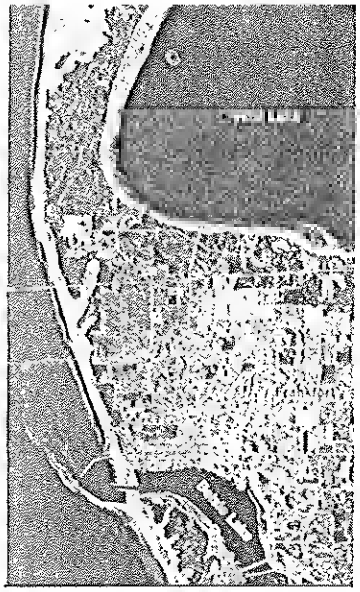
Causes of Problem

Early in my career I recognized navigational channels, harbors, jetties, dredging, offshore mining, etc. were the true cause of beach erosion and other related problems or symptoms. Through this research I found that when man changed earth's geological features that upset gravitational forces they created harmful unnatural erosive forces that quickly destroyed nature's protective shallow land and sea formations. These include beaches, deltas, watersheds along with their ecosystems, plants, animals etc. Natures land systems controlled and maintained critical water flow rates. Humans by altering gravitational gradients of land and rivers have set in motion powerful erosional streams responsible for land subsidence, beach loss, watershed destruction and thousands of other symptomatic problems throughout the world.

Negative channels, bad harbor designs and drainage along with bad policies ones without oversight have been creating artificially deep harbors and channels that serve powerful interests. These scouring and avulsion process have been destroying natural or normal hydraulic processes that have been undermining earth's land and watersheds for the last 150 + years.

Sea bottoms are losing sand and have become much steeper and deeper bottom gradients. This creates downhill gravitational movement of soils or sand. When the stream or flow velocity is doubled the soil carrying capacity of flow increases 64 times.

Frankfort Mi. Harbor Effects



Sand Diverted from Beaches

Former Grand Marais Harbor Mi.

Lost sand destroyed Harbor/Shore

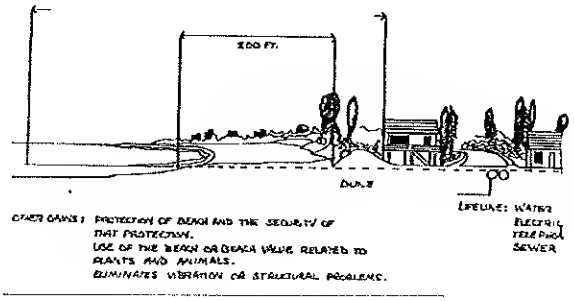
As offshore bottoms lose sand and deepen waves become larger.

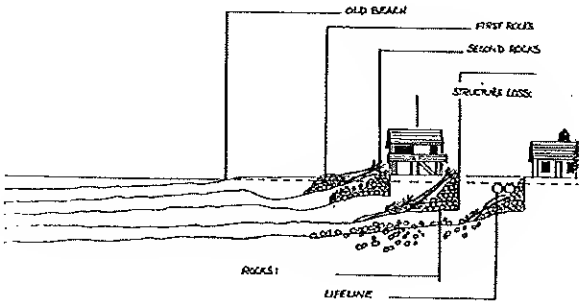
When outflowing water channels and escalated rivers move downhill as they cross through beaches they are removing soil offshore into ever deeper water. Sand depletion is the main reason natural protective beaches, deltas and adjoining watersheds are disappearing. Very few remain today or those that remain are not in pristine condition.

How Nature Works

Shoreline beaches and deltas had been self-expanding for thousands of years in the Americas until rivers were deepened for ships at the r mandate of the US Congress in the mid-1800.
Quote: Text-Book of Geology by James D. Dana Author of "Manual of Geology." "Along the whole eastern coast of the United States south of New England, and on all the borders of the Gulf of Mexico, the formations are mainly fluvio-marine --that is, the combined result of rivers and the ocean. The coast region on the continent is now slowly widening through this means and has been widening for all indefinite period" Time period 1863.

Instead of self-building beaches as shown on top page showing natural self-building shorelines sand is taken away by human processes.





Land and watersheds are being strip/mined under land and water.

Channels threaten Flagler Beach 6 mile shoreline.

Example

Canaveral Harbor is south of Flagler Beach

History and Time

After the 2nd World War in the 50's the federal Cape Canaveral Harbor was created. According to a 1990 Dept. of the Army Navigational Study for Canaveral Harbor, Florida and Feasibility and Environmental Study. A 14 mile long Federal Channel was dredged 27 feet below Sea Level into Florida' SE Atlantic Coast to establish a federal Harbor. The land located above the sea began to disappear then reappear at the dredging site 41 miles and 14 offshore. This single project has been credited both legally and scientifically for causing continous erosion to 574 square miles of coast. Problems and Causes

Cape Canaveral History

Over the last 60 plus years. This 574 square has been self-deepening. According to government navigational charts the water depth is now 30 feet deep 1 mile offshore. Cape Canaveral's Harbor entrance is maintained at 44 feet below sea level which is 58 feet below the land's surface level.

The Cape may seem far away from Flagler Beach but the US Army has proven that sand can be easily transported long distances and lost within hours to gravitational forces.

According to aerial images and official charts sand is still being lost along shores. This just the opposite of the Army's 1990 feasibility study provided to State officials and the public.

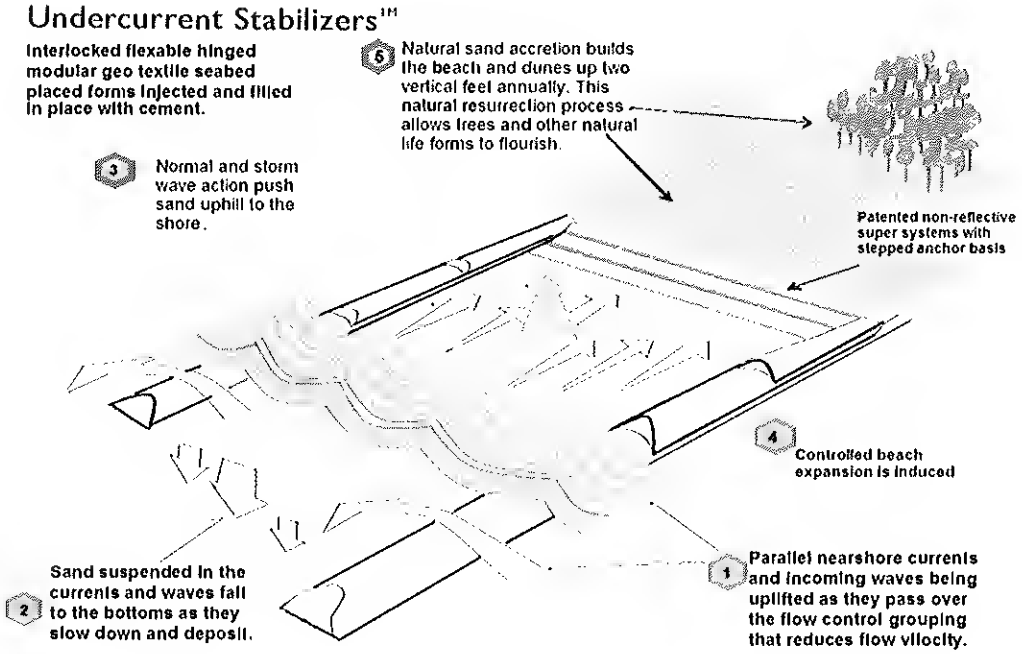
The shore line located between Cape Canaveral and Flagler has narrowed to 150 feet separating Florida's wetlands from the Atlantic Ocean.

Jettied Inlet 30 miles south of Flagler Beach

New Smyrna, Florida

HTI System shown below can prevent these types of problems.

Graphical Illustration



PROJECT

Estimated cost $9,000,000 plus $1,000,000 toward engineering, technical and other costs. Two Systems placed where shown. Approximately 600 feet parallel and 350 seaward of stair cased anchor base as illustrated in the Saudi photos.

Total Cost $10,000,000.

Costs are estimated and based on current site condition and prices. "Costs subject to change

Cost vs. Benefits

By installing the Holmberg system natural accretion will resume and eliminate the need for future dredging. This will end the need for erosion related expenditures in the future. The following bullet points describe example of cost benefits when the system in installed for one year.

One square mile is 5280 ft.

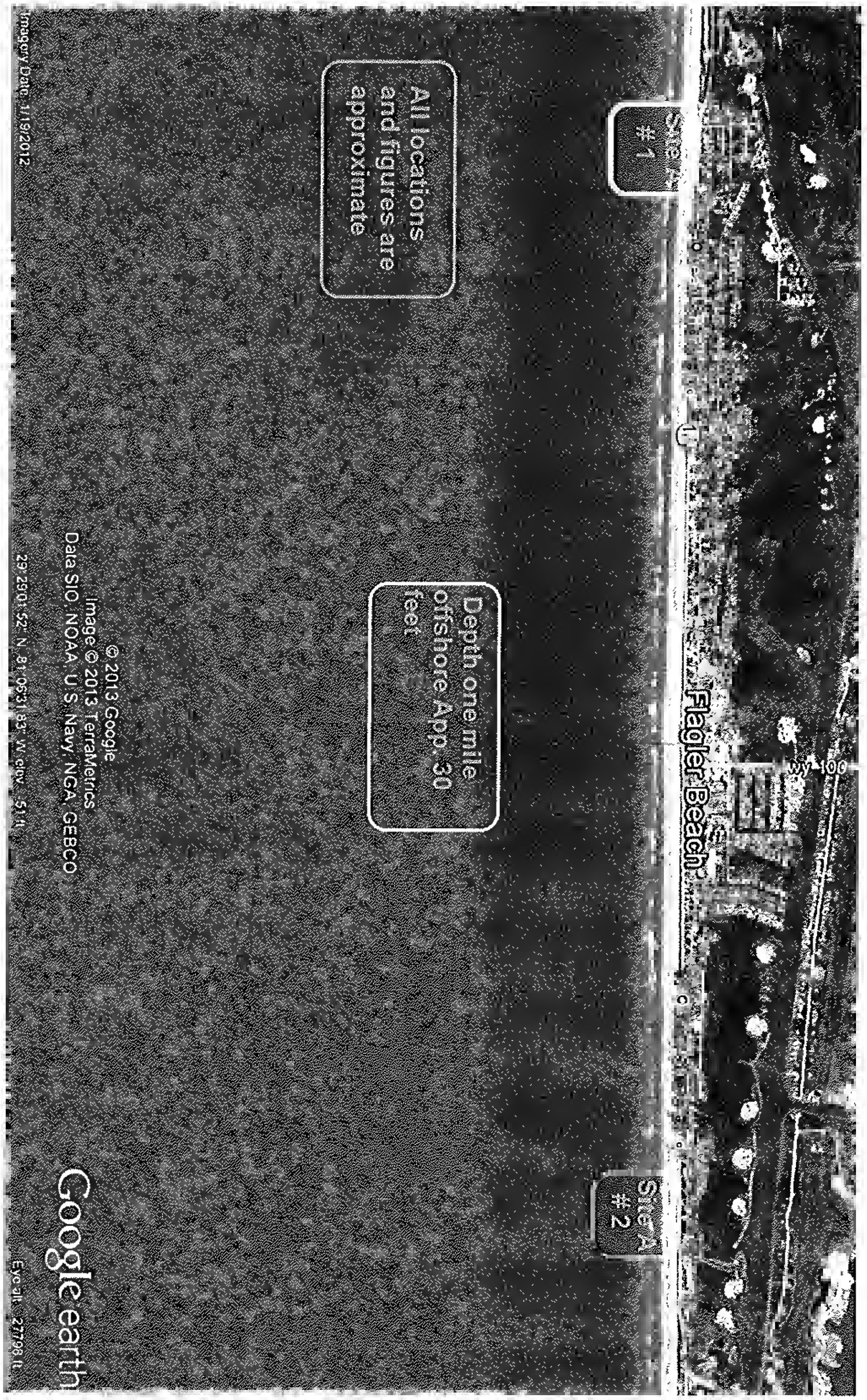
- **The Holmberg installation would address six square miles of Flagler Beach shoreline; running along the shore and extending in the ocean.**
- **Within the six square miles the beach would vertical increase by at least two feet.**
- **The sand gain would be approximately two million cubic yards (per mile) or one hundred twenty million cubic yards of sand over six miles. (2 million cubic yards of sand x 6 miles = 12,000,000 cubic yards of sand gained.**
- **If we conservatively estimate that the City purchased this amount of sand for $10 a cubic foot the cost would be $120,000,000 ($10 x 12,000,000).**

Flagler Beach and A1A looking South

Wall and rocks shown at edge of A1A

Flagler Beach and A1A looking North.
Steep Beach Profile
Navigational charts show water depth one mile is thirty feet.

Graphical Illustration City of Flagler Beach
Proposed sites and locations



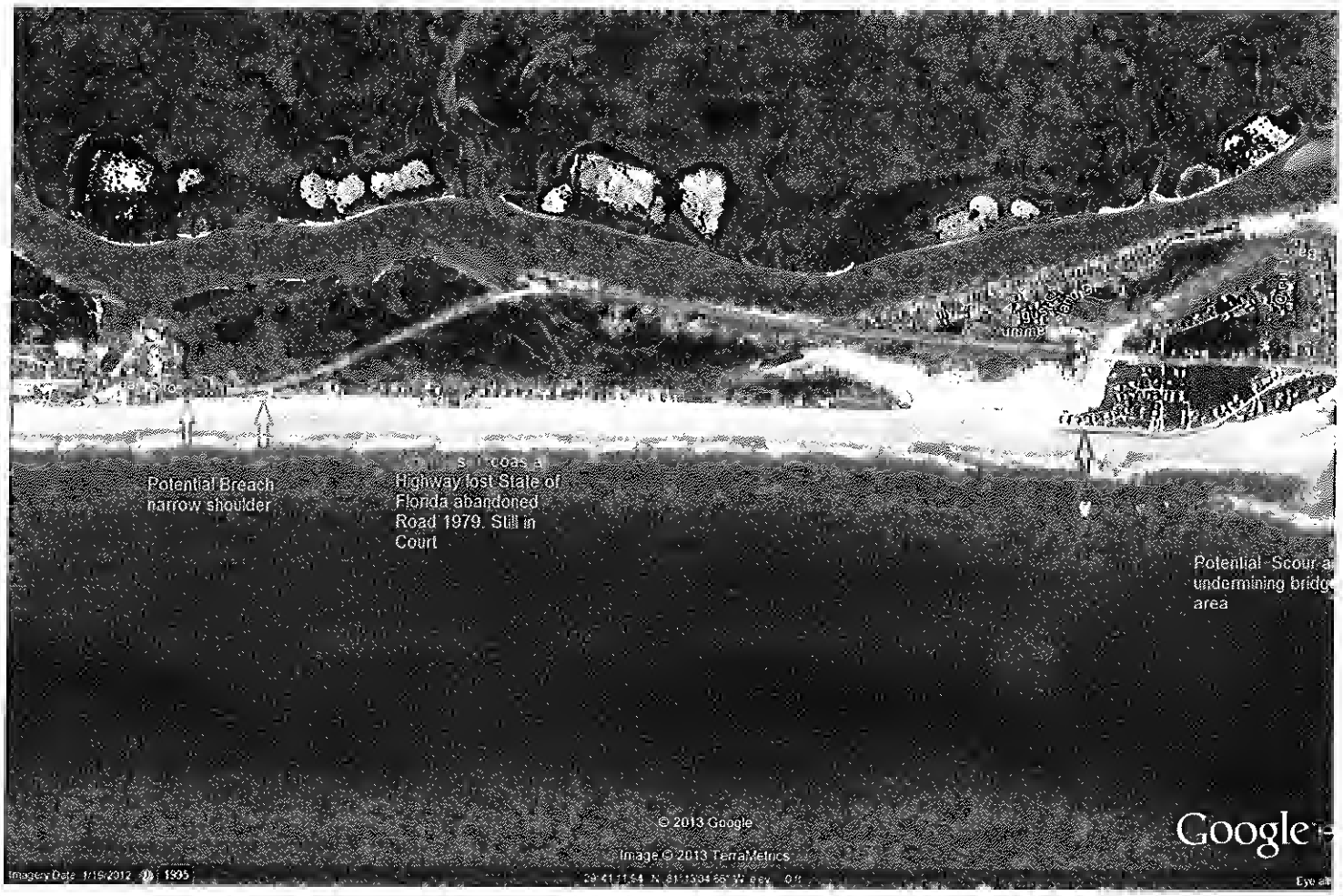
Where the illustrated HTI systems will be installed

Graphical Illustration Site one

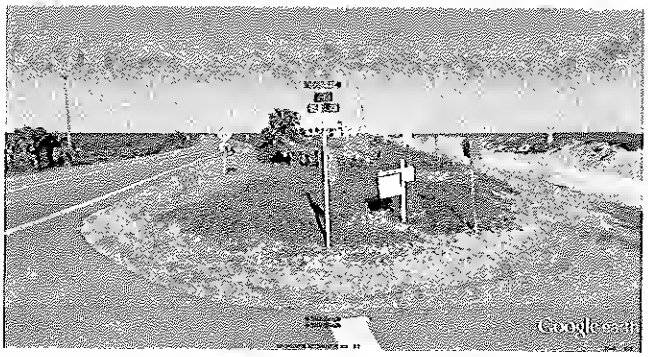
Graphical Illustration Site two

Flagler Beach and lost A1A (1.6mile)

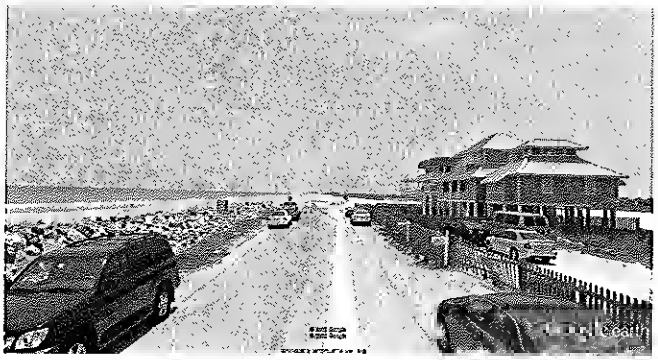
A1A was formally located between red arrows shown on image.



This A1A site is where the 1.6 miles of road was located about 14 miles north of Flagler Beach near Matanzas Pass



Looking North



Looking South

Since A1A was lost all that remains is legal action.

Pass located approximately 30 miles north of Flagler Beach

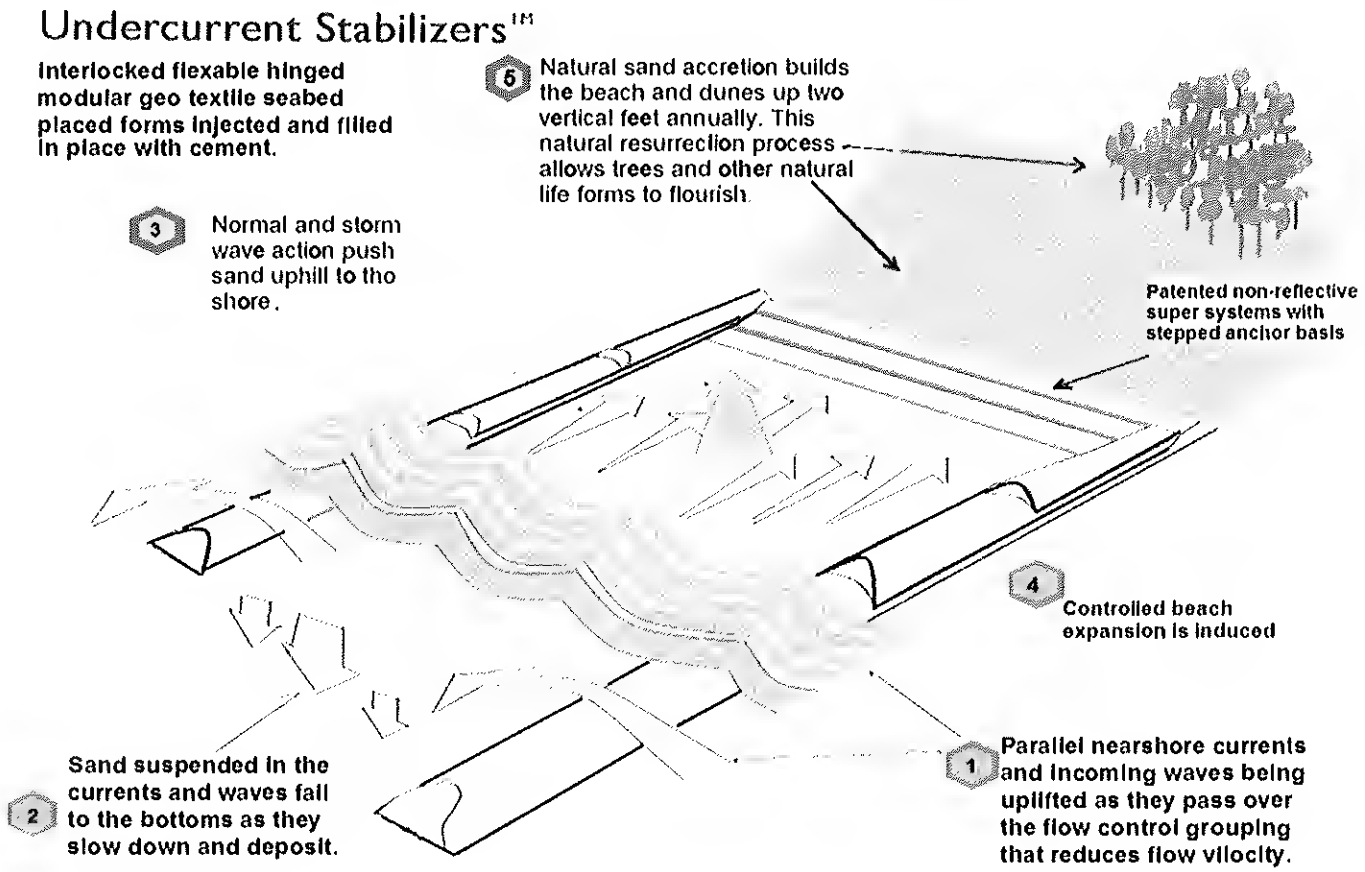
Mayport is a Jettied Federal Harbor

North of Flagler Beach

The aerial pictures and images are being used to show actual HTI projects to show how our technology works to solve sand depletion problem such as Flagler's Beach and A1A

How technology works.

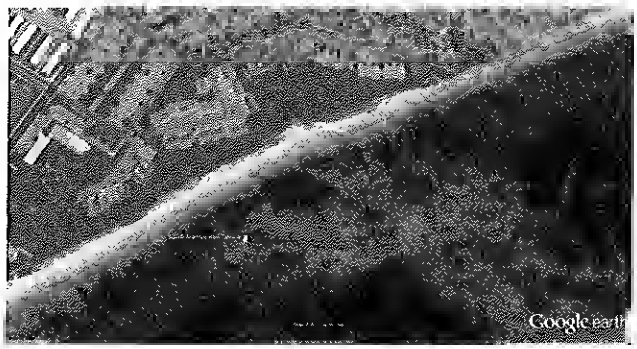
Holmberg Technology Explained Graphically



HTI technology is successful because it targets and treats the causes of erosion not the symptoms. Traditional methods are mainly used to battle waves and high water which are involved but not the cause of beach erosion. Studies have found that anti-wave shore protection structures increase sand loss and beach erosion.

Shown is an aeial veiw of one of our systems being installed at Saudi Aramco's Gated Community

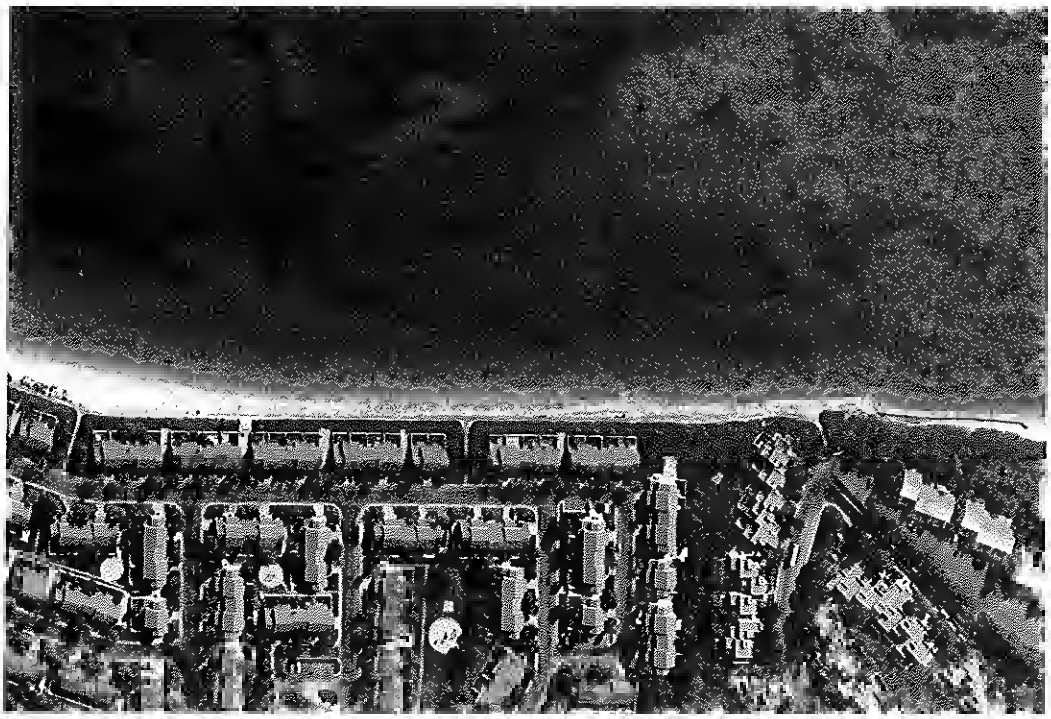
Satellite View after installation



12 years of Sand Accretion

New Beach

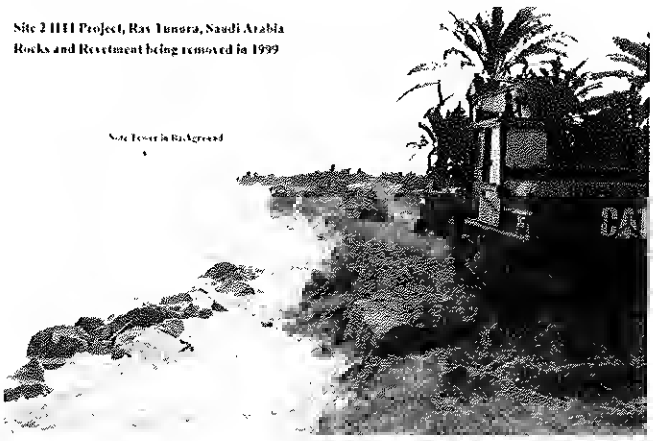
Before Disappearing Sand and Shore



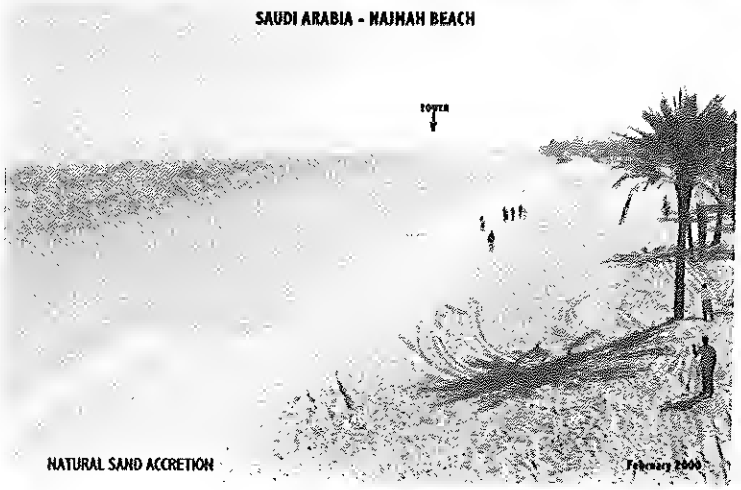
This photo above shows self-building beaches with rocks being covered by rising sand level.

Aramco, Rocks being removed before

Saudi, Stabilizers were installed 1999



2000 Feb. two months later



12 years Sandy Beach and Dunes with Water Fountain

PRE -EXISTING CONDITIONS, LAND SUBSIDANCE, STORMS, ETC

Holmberg Anchor Base and Parallel Staircase Nov.1999

After Seven Years of sand accretion.

Twelve years of sand accretion

We all can make a difference by working with nature.

GROWING NEW BEACHES, LAND & DUNES

WHETHER FRESH or SALT WATER HTI WORKS

DUCK LAKE STUDY PROJECT SAVING A SCENIC DRIVE

Before photos with afters shown below

1991 Western Michigan University Study with control sites

After 11 years of sand accretion

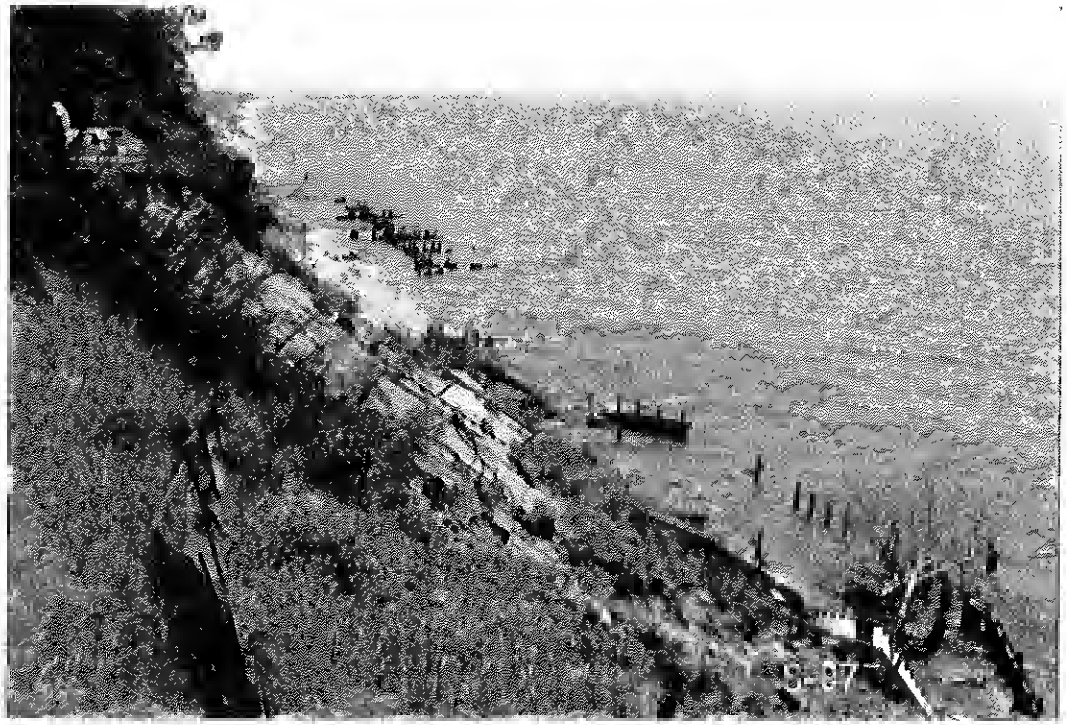
2002

After 26 years of sand accretion

2007

Make Nature a Friend

Jettied Harbor in Background **Port Sheldon, Michigan**



Over seventy feet of hill lost. **1997**

After 16 years of natural sand accretion **2003**

1994 Seventy feet of hill loss

After 8 Years of sand accretion 2002

16 vertical + feet of sand elevation, soil, plants and new land

Port Sheldon, Michigan

In Background Channel with Jetties

1994

8 years of sand accretion **2002**

Embankment Collapsing with Road and Scenic Drive down to One Lane.

1989

Two Feet of Free Soil delivered annually.

New Plants Established, Water Retention Methods, Insures Slope Stability.

After 14 years of sand accretion **2003**

North of Jettied Harbor at New Buffalo, Michigan

Over fifty years of failed tradional erosion control methods

After fifty years of ineffectual methods **1983**

After 29 years of sand accretion **2012**

North of Jettied Harbor, New Buffalo, Michigan

Looking South

This platform was buried by rising sand

After 14 years of sand accretion New hillside and dunes
Checking out disappearing land and damage

After 4 years of Sand accretion. **2003**

Old methods, Same Lake Michigan Shoreline, South of Jettied Harbor at ST. Joseph, Michigan, Deep water, problems with big waves and failing structure

Comparing HTI results against old methods in same body of water.

Former Destruction, Then new results with superior design & methods

Deep water, failing structures, undermined roadways, sand less, unsafe water fronts, things that turn people away into abandonment.

Lake Michigan

Harbors have serious problems big or small

Lake Michigan

Lake Michigan

Harbor Effects; Surrounding Shores Retreat Miles Inland

HTI Site on Lake Michigan, USA

White Lake Harbor Jetties in background

1985 Lost Valley & Meinert Park, Michigan

1985

After 18 years of sand accretion **2003**

HTI Technical Background, Results, and Experience

Tested and documented in both fresh water and saltwater seas. Where over twenty studies have been conducted that proved our technology is scientifically correct and successful in re-establishing natural accretion processes and recovering lost land.

More importantly, benthic studies have provided data confirming the beneficial results of being able to re-establishing destroyed aquatic ecosystems (Goudas PU, 11 sites) (Straw and Barnes WMU, 5 sites) (Wright and Finley UM, 4 sites) (Kadelsic WBDC, 1 site) (Schultz, PE 7 sites) (Young, PE, 1 site) (Natural Systems, 1 site).

(Some of Scientific and Technical Reviews, Patented "Undercurrent Stabilizer" Systems

"Undercurrent Stabilizer System Shore Stabilization/Accretion Demonstration Projects, Great Lakes Coastal Research Programs,

- **A. Douglas Road**
- **B. Tawas City**
- **C. Duck Lake Outlet**
- **D. Orchard Beach**
- **E. Nine Mile Point**

Background of HTI's Sole Source Technology

HTI uses Natural processes to recover soils from streams and offshore bottoms, retain upland water and resurrect life along eroding coastlines, land and waterways. As the developer and creator of this sand accretion technology and being issued several patents including the Undercurrent Stabilizers Systems (USS) that use modular geo synthetic forms that helped me create super designs and superior underwater bases. This has enabled us to control gravitational and other forces that move water, sediments, soil and most importantly gives us the ability to control and manage hydrodynamic forces to reduce hydraulic energy, pressure. Eliminate scour control liquefaction to insure longevity of emplacements.

In developing this technology to work in harmony with nature I found it is the only way to solve man-made problems and recover lost land. Low-profile systems work well (sometimes referred to as "speed bumps") are designed to slow and control unnatural water flows. Through research and work I found when sand starts to accrete naturally it progressively re-elevates the shoreline it was a natural process that self-expands beaches, dunes, shallows which raises and levels offshore profiles far beyond the treated area. We have scientifically proven over and over that adjacent shorelines not only benefit from reduced erosion, they gain sand from these unbounded feeder beaches and refurbish eco-systems with new life.

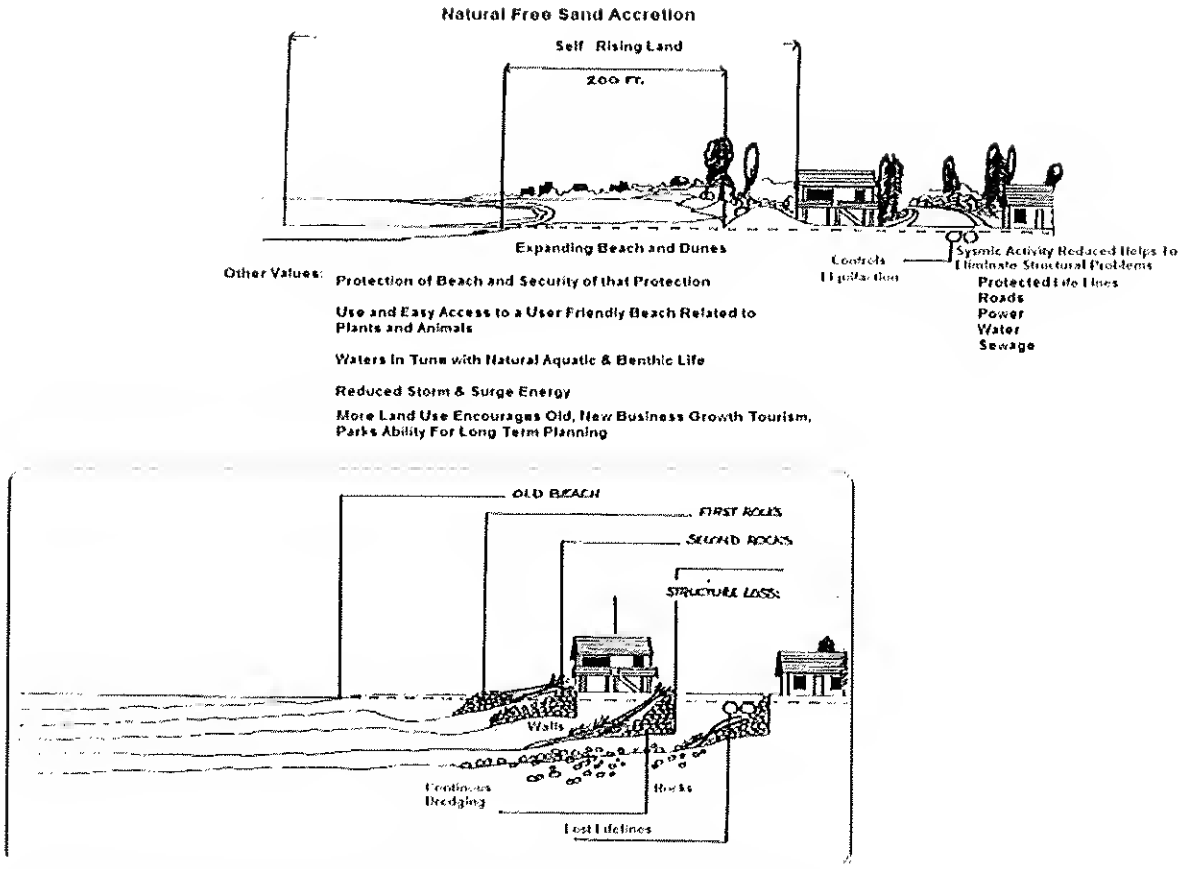
Allowing Nature to Work

The Holmberg systems are specifically designed to protect land and watersheds by simulating natural shallow or low angle topographical profiles that control the speed of water flows. This action limits undercutting scour, down cutting, liquefaction, seismic vibrations just to name a few. Working with nature is the only way to induce sand or soil accretion needed to re-establish self-building land, retain watershed and their eco-systems. When placed they began to help nature to restore land, lower sea levels, elevate by recovering lost land, help plants and trees, animals, benthic life and other life forms that stabilizes earth's climate and atmosphere for continuous and future growth.

The earth friendly systems perform equally as effective on shorelines with wide offshore shelves as along the Arabian Sea to the shores of the artic like conditions along the shores and waters of the stormy Great Lakes where offshore shelves are mostly narrow and sand sources are predominantly supplied from deep offshore areas. As the systems address subsurface erosional flow dynamics and scouring it has direct application to rivers as well. To date there are over 100 of our permanent systems with enlarged beaches, newly formed dunes and sub-dunes with healthy plant life as well as increased shoreline sand budgets.

The re-sedimentation process many times begins with surprising speed. Topographical monitoring at most sites has recorded two feet or more of vertical gain annually in the placement and adjoining areas. As the near shore beach profile becomes inherently accreting, the entire anchor template itself is typically buried very quickly by the rising land and soil levels. Two feet of vertical land rise Is about two milllon cubic yards of new soil annually. Even at a low dollar figure of ten US dollars a square yard it means a 20 million dollars of annual gain per square mile of new land with protective life zones that have super structures in place to induce and insure longevity.

HTI technology once placed begins a process that over time increases land along shorelines. This natural process is known as accretion. The illustration below, titled "Natural Free Sand Accretion" demonstrates this naturally occurring process and its benefits. Once installed maintenance costs are eliminated; in fact over time the project will pay for itself many times over by dramatically increasing sand accretion and the size of beach and land.



The above illustration shows what has happened to Flagler Beach's shoreline as dredging has occurred. Continued dredging has resulted in unnatural erosion known as avulsion. Over time the shore line has washed away despite sand replenishing and rock placement. Unlike HTI technology, dredging encourages avulsion, the loss of land by the unnatural use of water flow. Dredging increases the down slope of the shoreline; thereby increasing the velocity or speed of the water flow. Dredging and avulsion become a vicious cycle that requires constant maintenance and financial investment

Technical

From the Western Michigan University Study it said that "Consistent profile volume gain measured in the vicinity of the Undercurrent Stabilizer system (relative to a regional trend of profile volume loss) plus significant foreshore/back shore beach accretion with no apparent negative impact down drift must be viewed as success in almost any context."

This natural building process has been also consistently observed throughout many years of over 40 plus years of studies, research and field based monitoring. My companies have dealt successfully with thousands of soil and water related problems during this last half century. My company and work has been to protect life --all life-- by ending this human-induced cycle of destruction with methods

that allow nature to resurrect and to recreate life and land. We have proven and shown so many times that if
Humans would work with nature we can start to recover immediately.

Conclusion

Natural continuous building processes not only re-elevates land profiles and reintroduce life they negate problems by controlling the speed of flowing stream flows that scour soils from embankments a process of avulsion that undermine land formations and removes beaches, deltas, and change watersheds into unnatural waterways.

Once a natural building process is reestablished more and more sand is transported from offshore bottoms. As these bottoms rise and become more stable, the newly elevated shorelines offset the threat of rising sea levels by not only their presence but recovering sand and soil that is overfilling the oceans with sediment, by holding sand from the sea helps reduce displaced sand from filling in navigational channels, inlets and harbors and sea bottoms.

Natural self-rising bottoms force large waves to elongate and break further off shore eliminating storm surge damage, liquefaction, saltwater intrusion and other preventable problems. New elevated land normal land gradients prevent salt water intrusion landward or inland. Natural self-rising beach and dunes acts like dike systems that retain, filter and maintain fresh water habitat. Natural sand and soil deposition not only build up land they mitigates avulsion flows that move sand offshore and out of the natural system where it drawn into deep channels into underwater streams such as the Gulf stream that flows north around Florida into the Atlantic ocean.

Natural building process re-elevate land profiles and reintroduces ecological life while negating serious problems such as rip currents that scour bottoms and undermine land and destroy watersheds. Rising sea bottoms force large waves to elongate and break further off shore which provides protection from storm damage. Rising land also prevents storm surge damage and salt water intrusion which destroys fresh water habitat with dependent life forms now mostly faced with extinction.

It is very important in understanding the difference between natural and unnatural processes. A natural sand accretion process allows beaches, deltas along with other land areas to expand and rise, which are an important factor in countering the threat of sea levels rise. The best part is natural accretion deposits sand on shore for free.

Human induced beach erosion is just the opposite of accretion as it removes sand from shore to distant offshore bottoms. This deadly process lowers land elevations that raise ocean levels inland over the undermined underwater surfaces. These are some of the bad things that should be known about these human induced submergence problems.

There are thousands of symptoms. Storm waves that formally broke harmlessly offshore are enabled to come inland, to wreck, raise havoc as they destroy once stable and secure areas. Loss of freshwater to salt water intrusion is a serious problem; many areas along US Coasts intrusion is reaching 40 miles or more inland threatening thousands of freshwater aquifers. There are so many critical threats associated with avulsion.

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HTI has a large research reference library of data. Which was used to prepare this analysis work for Flagler Beach.

This analysis was based on Flagler Beach problems and broadly covers many other water related problems connected to humans such as gravitational changes escalating water flow over or through land and sea. Today unnatural channelization and drainage problems created by humans are rapidly dropping upper land levels below sea level and dropping and diminishing freshwater tables on land. All these harmful human excavation process need to be reviewed, mitigated or stopped before they undermine destroy the earth's remaining eco-systems and surface habitat, which humans almost all present life forms depends. This unnatural process is called avulsion and primary reason behind sea level rise (salt water), storm surge, saltwater intrusion, and loss of watersheds, fresh water, land, plants and animals etc. The only solution is to prevent or control the flow speed of water to one that is natural. By controlling or slowing the speed of water or velocity of streams soil deposits that raise land levels. Soil accretion and water retention then help to stop rising sea levels. By allowing natural waves and currents to accrete soils and retain surface water life can return to the land and sea with all the wonderful benefits once provided by nature.

By installing the Holmberg system natural accretion will resume and eliminate the need for future dredging. This will end the need for erosion related expenditures in the future. The following bullet points describe example of cost benefits when the system in installed for one year.

- One square mile is 5280 ft.
- The Holmeberg installation would address six square miles of Flagler Beach shoreline; running along the shore and extending in the ocean.
- Within the six square miles the beach would vertical increase by at least two feet.
- The sand gain would be approximately two million cubic yards (per mile) or one hundred twenty million cubic yards of sand over six miles. (2 million cubic yards of sand x 6 miles = 12,000,000 cubic yards of sand gained.
- If we conservatively estimate that the City purchased this amount of sand for $10 a cubic foot the cost would be $120,000,000 ($10 x 12,000,000).